DOCUMENT RESUME

ED 202 647 RC 012 734

TITLE	National Migrant Education Program: Mini-Math Skills K-3.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	Aug 79
CONTRACT	300-76-0090
NOTE	52p.; For related documents, see RC 012 730-733 and RC 012 735-736.
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Developmental Tasks; Learning Readiness; *Mathematics Education; *Measures (Individuals); *Migrant Children; *Migrant Education; Number Concepts; Primary Education; *Skill Analysis; *Student Records; Transfer Students; Whole Numbers
IDENTIFIERS	*Migrant Student Record Transfer System

ABSTRACT

Used as an integral part of the migrant student skills system operated by the Migrant Student Record Transfer System (MSRTS), the mini-math skills list contains a catalog of math skills typical of the K-3 grade range. The document presents an explanation of terminology used for the MSRTS mini-math outline: areas, topics, subtopics, skills, and displays. It contains displays for six major areas: (1) readiness, (2) number meaning, (3) whole numbers, (4) fractions, (5) measurements, and (6) sets, and lists characteristics of topics and subtopics for each area. (JD)

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RC 012734

ED 202647

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NATIONAL MIGRANT EDUCATION PROGRAM

Mini-Math Skills K-3

August 1979

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The Math Skills List was developed in cooperation with the Migrant Branch of the United States Office of Education, the National Association of State Directors of Migrant Education, the Migrant Student Record Transfer System, and a committee of states which we gratefully acknowledge:

Arizona
California
Colorado
Florida
Idaho
Kansas
Michigan
New York
New Mexico
Oregon
Pennsylvania
Texas
Washington

Produced with funds provided through P.L. 93-380.

FOREWORD

This document contains a catalog of math skills typical of the K-3 grade range. The math skills list is an integral part of the migrant student skills system which is operated by the Migrant Student Record Transfer System and its users.

This catalog, whose content was developed by hundreds of educators across the United States, permits teachers to report math skills mastered and under study by migrant students. The reported skills become part of each student's record on the MSRTS and will thereby be available to teachers, aides, and tutors serving migrant students.

The skills list presented here is not intended to represent a curriculum or an implied learning sequence. This is not an exhaustive list of K-3 skills.

"The work upon which this publication is based was performed pursuant to Contract 300-76-0090 with the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred."

EXPLANATION OF TERMINOLOGY FOR MSRTS MINI-MATH OUTLINE

1. **AREA:** *An Area is a collection of skills under a particular discipline such as reading, math, etc.* Readiness, Number Meaning, Whole Numbers, Fractions, Measurement and Sets are the six major **Areas.**

2. **TOPICS:** *A Topic is a collection of skills in one or more Subtopics.* The **Topics** are listed under the six major **Areas** on the Mini-Math Outline.

3. **SUBTOPICS:** *A Subtopic is a collection of closely related Skills.* All items listed under the **Topics** (in the manual) will be referred to as **Subtopics.**

4. **SKILLS:** *A Skill is a discrete and observable unit of student behavior.* All items listed under the **Subtopics** (in the manual) will be referred to as **Skills.**

5. **DISPLAYS:** *The group of skills from which a teacher may select specific skills are referred to as Displays.*

The following page is a copy of the MSRTS Mini-Math Outline.

MSRTS MINI-MATH OUTLINE

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READINESS

RECOGNITION OF PROPERTIES

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
001 Color as a Property	00101	A. The word "color"	Names a color	"Tell me a color." (Green)
		B. Objects differentiated by color	Identifies color as the identifying characteristic	"How are these objects different?" (Color)
004 Shape as a Property	00401	A. The word "shape"	Names a shape	"Tell me a shape." (Square)
		B. Objects differentiated by shape	Identifies shape as a differentiating characteristic	"How are these objects different?" (Shape)
007 Dimension as a Property	00701	A. A description of dimensionality	Identifies objects differentiated by 2-D vs. 3-D	"A 2-D shape has length and width but no thickness. A 3-D object has all three." (Square: 2-D; box: 3-D)
		B. Objects differentiated by 2-D vs. 3-D	Names 2-D vs. 3-D as a differentiating characteristic	"What is the difference between a circle and a sphere?" (Circle is 2-D; sphere is 3-D)

READINESS

DIVISIONS WITHIN PROPERTIES

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
010 Primary Colors	01001	A. Name of a primary color (red, blue, yellow)	Identifies objects having a particular primary color	Red (truck)
		B. An object having a particular primary color	Names the color	Red truck (red)
013 2-D Shapes	01301	A. Name of a 2-D shape (circle, square, rectangle, triangle)	Identifies objects having that shape	Circle (points to circular piece of paper)
		B. Objects having a particular 2-D shape	Names the (2-D) shape	Square piece of paper (square)
016 3-D Shapes	01601	A. Name of a 3-D shape (sphere, cube, cone)	Identifies objects having the shape	Sphere (points to sphere)
		B. Objects having a particular 3-D shape	Names the (3-D) shape	"What is this?" (cone)
019 Line Segments Forming Shapes	01901	A. A 2-D shape	Identifies a line segment in the 2-D shape	"Show me a line segment." (Points to line segment in 2-D shape)
		B. A given number of line segments	Identifies the 2-D shape that can be constructed using the line segments	Three segments (triangle)

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READINESS

DISPLAY 3

COMPARISONS WITHIN PROPERTIES

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
028 Simple Spatial Relations	02801	A. Name of a spatial relation (right-left/above-below/in-out/beside/in front-behind)	Identifies objects having the given spatial relation	"In front" (places rock in front of box)
		B. Objects having a given spatial relation (right-left/above-below/in-out/beside/in front-behind)	Names the spatial relation	Wooden block above table (above)
031 Simple Temporal Relations	03101	A. Name of a temporal relation (before, during, after)	Identifies events having a given temporal relation	"Before" (got up before going to school)
		B. An example of a temporal relation	Names the temporal relation	Bell rang—went to lunch (after)
034 Size Relations	03401	A. Name of a size (area) relation (small-large/smaller-larger/smallest-largest)	Identifies objects having a specified size relation	"Which piece of paper is larger than this one?"
		B. Objects having size (area) differences	Names a particular size (area) relation	Point to smallest, ask pupil to state relative size (smallest)
037 Weight Relations	03701	A. Name of a weight relation (light-heavy/lighter-heavier/lightest-heaviest)	Identifies objects having a specified weight relation	"Which book is the lightest?"
		B. Objects having weight differences	Names a particular weight relation	Point to the heaviest, ask pupil to state relative weight (heaviest)
040 Length Relations	04001	A. Name of a length relation (short-long/shorter-longer/shortest-longest)	Identifies objects having a specified length relation	"Which pencil is longer than this one?"
		B. Objects having length differences	Names the length relation	Select two objects; point to the longer one (longer)
043 Volume Relations	04301	A. Name of a volume relation (more-less/more full-less full/most full-least full)	Identifies specified volume relations	Same-shaped containers with different levels of liquid
		B. Differing volumes	Names a particular volume relation	"Which have more water than this one?"
046 Simple Ordinal Relations	04601	A. Name of an order relationship (first, last, between)	Identifies object (symbol) in specified ordinal position	Children standing in line; "Who is first?"
		B. Objects occupying a given relative position	Names relative (ordinal) position of object (symbol)	Children standing in line; "Where is Alice?"

READINESS

PARTITIONING (GROUPING)

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
049 By Color	04901	A. Objects grouped by color	Names the color common to objects in a group	Red chips, blue chips, etc. "What color are these?"
		B. Name of one of the colors used in grouping objects	Identifies objects grouped by that color	"Which of the chips are red?"
052 By 2-D Shape	05201	A. Objects grouped by (2-D) shape (triangle, square, circle, rectangle)	Names the (2-D) shapes	Point to triangles; "What are those?"
		B. Name of one of shapes used in grouping objects	Identifies objects grouped by that (2-D) shape	Point to group of figures; "Show me a square."
055 By 3-D Shape	05501	A. Objects grouped by (3-D) shape (cone, cube, tetrahedron, cylinder)	Names the shape common to objects in a group	Point to cone; "What is this?"
		B. Name of one of the (3-D) shapes used in grouping objects	Identifies objects grouped by that (3-D) shape	Point to group of shapes; "Show me a sphere."

READINESS

ORDERING

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
058 By Size (Area)	05801	A. Objects ordered by size (area)	Names "size" (area) as the ordering property	Paper squares of varying area; "How are these squares ordered?"
		B. That size (area) was used to order objects	Identifies the objects that were ordered by size (area)	Groups of objects each ordered by a different property; "Which objects are ordered by size?"
061 By Weight	06101	A. Objects ordered by weight	Names "weight" as the ordering property	Rocks of varying weight; "How are these rocks different?"
		B. That weight was used to order objects	Identifies objects ordered on weight	"Which objects are ordered by weight?"
064 By Length	06401	A. Objects ordered by length	Names "length" as the ordering property	Sticks of varying length; "How are these sticks different?"
		B. That length was used to order objects	Identifies objects ordered on length	"Which objects are ordered by length?"
067 By Volume	06701	A. Objects ordered by volume	Names "volume" as the ordering property	Containers of varying capacity; "How are these containers different?"
		B. That volume was used to order objects	Identifies quantities ordered on volume	"Which objects are ordered by volume?"

NUMBER MEANING

BASIC

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
070 Numerals and Associated Word Names	07001	A. The numerals 0 - 9	Names the numerals	3 (three)
		B. Word names "zero" . . . "nine"	Identifies the numerals corresponding to the word names	zero (0)
	07002	A. The numerals 10, 20, 30 . . . 100	Names the numerals	40 (forty)
		B. Word names "ten," "twenty," . . . "one hundred"	Identifies the numerals corresponding to the word names	seventy (70)
073 Signs (<, >, =) and Associated Word Names	07301	A collection of pairs of whole numbers	Identifies, using the symbols "<," ">," "=," the relationship among the pairs of numbers	47 ( ) 51 (<)
	07302	A. The symbols "=," "<," ">"	Names the symbols	< (less than)
		B. Word names "equal to," "less than," and "greater than"	Identifies the symbols corresponding to the word names	equal to (=)
076 Ordination	07601	A. A row of ten objects	Names the ordinal position (first, second . . . tenth) of a specified object	↓ . . . . . . (fourth)
		B. The name of an ordinal position (first, second . . . tenth)	Identifies object occupying the given ordinal position	seventh ↓ (. . . . . .)
079 Counting	07901	A. Arrays of the numerals 1-10	Identifies the array representing counting 1-10	1 2 3 4 5 6 7 8 9 10 (child associates numerals with counting sequence)
		B. Arrays of the numerals 1-100	Identifies the array representing counting 1-100	Same as 29a with numerals 1-100
		C. Arrays of the numerals 1-100,000	Identifies the array representing counting 1-100,000	Same as 29a with numerals 1-100,000

WHOLE NUMBERS

BASIC CHARACTERISTICS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
082 Place Value	08201	A single digit numeral (0-9)	Names the place value of the digit	3 (ones)
	08202	A. A two digit numeral (10-99)	Names the place value of a given digit in the numeral	29 (tens)
		B. A place value name (ones, tens) and a two digit numeral	Identifies the digit in the numeral occupying that place	56-ones (6)
	08203	A. A three digit numeral (100-999)	Names the place value of a given digit in the numeral	375 (tens)
		B. A place value name (ones, tens, or hundreds) and a three digit numeral	Identifies the digit occupying that place value	582-hundreds (5)
	08204	A. A four digit numeral (1,000-9,999)	Names the place value of a given digit in the numeral	3,798 (hundreds)
		B. A place value name (ones, tens, hundreds, or thousands) and a four digit numeral	Identifies the digit occupying that place value	7,203-tens (zero)
	08205	A. A five (or more) digit numeral (10,000-. . .)	Names the place value of a given digit in the numeral	32,964 (ten thousands)
		B. Place value names (ones, tens hundreds, thousands, ten-thousands) and a five (or more) digit numeral	Identifies the digit occupying that place value	460,237-tens (3)
085 Expanded Notation	08501	A. A two digit numeral	Identifies an expanded notation form (using word names) of the two digit numeral	26 = (2 tens + 6 ones)
		B. A two digit numeral	Identifies an expanded notation form (using numerals) of the numeral	26 = (20 + 6)
		C. An expanded notation form (using word names) of a two digit numeral	Identifies the two digit numeral represented by the expanded notation form	forty + six = (46)

WHOLE NUMBERS

BASIC CHARACTERISTICS

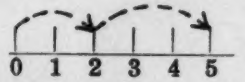
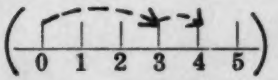
DISPLAY 7
(Continued)

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
085 Expanded Notation (continued)	08502	A. A three digit numeral	Identifies an expanded notation form (using word names) of the numeral	327 = (three hundreds + two tens + seven)
		B. A three digit numeral	Identifies an expanded notation form (using numerals) of the numeral	417 = (400 + 10 + 7)
		C. An expanded notation form (using word names) of a three digit numeral	Identifies the three digit numeral represented by the expanded notation form	One hundred + seven tens + nine = (179)
	08503	A. A number greater than 1,000	Identifies an expanded notation form (using word names) of the number	6,037 = (six thousands + three tens + seven)
		B. A number greater than 1,000	Identifies an expanded notation form (using numerals) of the numeral	8,123 — (8,000 + 100 + 20 + 3)
		C. An expanded notation form (using word names) of a number greater than 1,000	Identifies the multi-digit numeral represented by the expanded notation form	Two thousand + three hundred + sixteen = (2,316)
088 Number Line	08801	A number line representation of the whole numbers 1 through 10, with numbers missing	Identifies one or more numbers missing from the number line	1 2 3 4 6 7 8 9 (5, 8, 10)
	08802	A number line	Identifies points on the number line representing the whole numbers (1-10)	0 (1 2 3 4 5 6 7 8 9 10)
	08803	Several positive and negative numbers and zero on a number line	Continues sequence in positive or negative directions	–2 –1 0 1 2
	08804	A. Unlabeled point in a sequence of labeled points on a rational number line	Names the point	0 1/4 1/2 / 1 (3/4)
		B. The name of a rational number and a rational number line	Identifies the point	0 1/2 5/6 1
	08805	A positive or negative whole number (—15 to +15)	Locates the point on a number line corresponding to the number	Locate –12 on the number line 0 (×)
091 Even/Odd Numbers	09101	A. A collection of numbers (between 1 and 1,000)	Names each number as "even" or "odd"	16 (even) ; 327 (odd)
		B. The names "even" or "odd" and a group of numbers	Identifies collection of numbers as even or odd	"Underline the odd numbers" (1, 46, 7, 257, 13, 6, . . .)
094 Composite/Prime Numbers	09401	A. A definition of prime numbers	Identifies the correct definition of prime numbers	1. A prime number has only two factors. 2. A prime number has only one factor. (1st is correct)
		B. A list containing both prime and composite numbers	Identifies the prime numbers in the list	1, 3, 47, 8, 19, 21 (3, 47, 19)

WHOLE NUMBERS

DISPLAY 8

ADDITION

SUBTOPICS		GIVEN		THE STUDENT	EXAMPLE
097 Terms ("Sum," etc.) and Signs ("=")	09701	A.	An example of an addition problem	Names the underlined part in the problem using the terms of addition	$4 + 7 = \underline{11}$ (sum)
		B.	The names of terms used in addition (sum, addend)	Identifies the terms by locating appropriate numeral(s) in written addition problem	$6 + 4 = 10$, "Sum" $(\underline{10})$
		C.	The operation sign for addition	Names the sign	"+" (plus)
100 Associative, Commutative Relations	10001		An example of an associative relation	Identifies example as an associative relation	$(3 + 5) + 8 = 3 + (5 + 8)$ (associative)
	10002		An example of a commutative relation	Identifies example as a commutative relation	$2 + 3 = 3 + 2$ (commutative)
103 Estimation of Column Addition	10301		An addition sentence with four or more addends and a missing sum	Identifies estimate of sum by rounding addends to nearest ten	$8 + 4 + 9 + 17 =$ ____ (40)
	10302		An addition sentence with four or more addends and an estimated sum	Names the estimation technique (rounding by tens, hundreds, etc.) that was used	$32 + 8 + 11 + 23 = \underline{70}$ (rounding by tens)
106 Expanded Notation Form	10601	A.	An addition sentence (involving no regrouping)	Identifies an expanded notation solution to the addition sentence	$22 + 7 =$ $(20 + 2 + 7 = 20 + 9 = 29)$
		B.	An addition sentence (involving no regrouping) in expanded notation form	Identifies a number sentence corresponding to the expanded notation form	$40 + 3 + 5$ $(43 + 5)$
	10602	A.	An addition sentence (involving regrouping)	Identifies an expanded notation solution to the number sentence	$22 + 7 =$ $(20 + 2 + 7 = 20 + 9 = 29)$
		B.	An addition sentence (involving regrouping)	Identifies a number sentence corresponding to the expanded notation form	$40 + 6 + 7 = 40 + 13 = 53$ $(46 + 7)$
115 On a Number Line	11501	A.	A number line representation of an addition number sentence	Identifies a corresponding number sentence	 $(2 + 3 = 5)$
		B.	An addition number sentence	Identifies a number line expression of the number sentence	$3 + 1 = 4$ 
109 Using Word Names	10901	A.	An addition number sentence using word names	Identifies the corresponding number sentence using numerals	Three plus six is nine $(3 + 6 = 9)$
		B.	A number sentence using numerals	Identifies the corresponding number sentence using word names	$3 + 6 = 9$ (Three plus six is nine)

DISPLAY 8
(Continued)

WHOLE NUMBERS

ADDITION

	SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
118	Basic Addition Facts	11801	1 digit + 1 digit = sum less than 10	Identifies the sum	3 + 4 = ____ (7)
		11802	1 digit + 1 digit = sum greater than or equal to 10	Identifies the sum	8 + 8 = ____ (16)
121	Two Addends, No Regrouping	12101	2 digits + 1 digit	Identifies the sum	24 + 3 = ____ (27)
		12102	2 digits + 2 digits	Identifies the sum	33 + 12 = ____ (45)
		12103	2 digit multiple of 10 + 2 digit multiple of 10	Identifies the sum	40 + 50 = ____ (90)
		12104	3 digits + 3 digits	Identifies the sum	111 + 343 = ____ (454)
124	Two Addends, Regrouping	12401	2 digits + 1 digit	Identifies the sum	17 + 5 = ____ (22)
		12402	2 digits + 2 digits	Identifies the sum	47 + 26 = ____ (73)
		12403	2 digit multiple of 10 + 2 digit multiple of 10	Identifies the sum	60 + 80 = ____ (140)
		12404	3 digits (with 0 in tens place) + 2 digits	Identifies the sum	701 + 89 = ____ (790)
		12405	3 digits + 3 digits	Identifies the sum	628 + 937 = ____ (1,565)
127	Multiple Addends, Regrouping	12701	4 addends: Each addend is a multiple of 10 less than 100	Identifies the sum	70 + 20 + 50 + 90 = ____ (230)
		12702	4 addends: Each addend is a multiple of 100	Identifies the sum	1,600 + 100 + 500 + 8,000 = ____ (10,200)
		12703	4 addends with varying number of digits	Identifies the sum	2,754 + 22 + 1,875 + 542 = ____ (5,193)

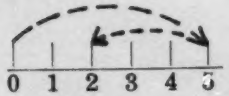
WHOLE NUMBERS

SUBTRACTION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
130 Terms and Signs	13001	A The operation sign for subtraction	Names the sign	"—" (minus)
		B. The names "minus" and "difference"	Identifies the minus sign and the difference	"Difference" $(5 \underset{(\downarrow)}{-} 3 = 2)$
133 Vertical Form	13310	A. A subtraction problem in vertical form	Identifies an equivalent number sentence	$\begin{array}{r} 8 \\ -3 \\ \hline 5 \end{array}$ $(8 - 3 = 5)$
		B. A subtraction number sentence in horizontal form	Identifies the corresponding subtraction problem in vertical form	$6 - 3 = 3 \left(\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \right)$
137 As Inverse Addition	13701	An open number addition sentence with missing addend	Identifies the process for finding a solution to the sentence as subtraction	$8 + ____ = 12$ "Subtraction" or $(12 - 8 = 4)$
141 Expanded Notation Solution—No Regrouping	14101	A. A subtraction number sentence	Identifies an expanded notation solution to the number sentence	$37 - 12 = ____$ $(30 + 7 - 10 - 2 = ____)$ $(30 - 10 + 7 - 2 = ____)$ $(20 + 5 = 25)$
		B. A subtraction number sentence in expanded notation form	Identifies the corresponding subtraction problem	$50 + 6 - 20 - 2 = ____$ $50 - 20 + 6 - 2 = ____$ $30 + 4 = 34$ $(56 - 22)$
144 Expanded Notation Solution—Regrouping	14401	A. A subtraction number sentence	Identifies an expanded notation solution to the number sentence	$72 - 39 = ____$ $(70 + 2 - 30 - 9 = ____)$ $(60 + 12 - 30 - 9 = ____)$ $(60 - 30 + 12 - 9 = ____)$ $(30 + 3 = 33)$

WHOLE NUMBERS

SUBTRACTION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
144 Expanded Notation Solution—Regrouping (continued)	14401	B. An expanded notation solution to a subtraction problem	Identifies the corresponding subtraction problem	$40 - 20 + 13 - 7 = ____$ $20 + 6 = 26$ $(53 - 27)$
147 Number Line Subtraction	14701	A. A number line representation of a subtraction number sentence	Identifies a subtraction number sentence corresponding to the number line representation	 $(5 - 3 = 2)$
		B. A subtraction number sentence	Identifies a number line expression of the subtraction number sentence	$10 - 3 = 7$
150 Using Word Names	15001	A. A subtraction number sentence using word names	Identifies the corresponding subtraction number sentence using numerals	Six minus four is two $(6 - 4 = 2)$
		B. A subtraction number sentence using numerals	Identifies the subtraction number sentence using word names	$7 - 2 = 5$ (Seven minus two is five)
153 Computation Involving No Regrouping	15301	1 digit — 1 digit	Computes difference	$9 - 3 = ____$ (6)
	15302	2 digits — 1 digit	Computes difference	$18 - 3 = ____$ (15)
	15303	2 digits — 2 digits	Computes difference	$47 - 34 = ____$ (13)
	15304	3 digits — 3 digits	Computes difference	$875 - 521 = ____$ (354)
	15305	3 digits — 3 digits (with 0 in tens place)	Computes difference	$594 - 203 = ____$ (391)
	15306	4 digits — 3 digits	Computes difference	$5{,}743 - 321 = ____$ (5,422)

WHOLE NUMBERS

MULTIPLICATION

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
159 Terms and Signs	15901	A. An example of a multiplication problem	Names the terms used in multiplication (factor; product)	$3 \times 5 = 15$ (3 and 5 are products. 15 is the product.)
		B. The names of terms used in multiplication	Identifies the terms by locating appropriate numeral(s) in written multiplication problem	"product" $(4 \times 6 = \underline{24})$
		C. The symbols for multiplication	Identifies the operation symbolized	"$\times$," "$\cdot$," no symbol as in "3(10)" "(4) (12)," (multiplication)
171 Repeated Addition Sentence	17101	A. A multiplication problem involving two factors	Identifies a repeated addition sentence representing the multiplication problem	$3 \times 4 =$ ____ (4 + 4 + 4 or 3 + 3 + 3 + 3)
		B. A repeated addition problem with identical addends	Identifies a product representing the repeated addition sentence	$8 + 8 + 8 + 8 + 8 =$ (5×8)

WHOLE NUMBERS

DIVISION

	SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
201	As Multiples of 10	20101	A division problem	Identifies the largest multiple of 10 which when multiplied by the divisor is less than or equal to the dividend	$147 \div 6 =$ ____ (20)
204	Single Digit Divisor and Dividend, Remainder = 0	20401	1 digit ÷ 1 digit	Computes quotient	$8 \div 2$ or $2\overline{)8} =$ ____ (4)

35

36

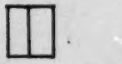
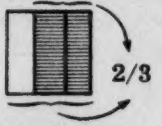
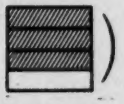
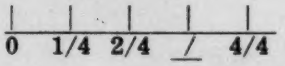
WHOLE NUMBERS

APPLICATIONS

SUBTOPICS			GIVEN	THE STUDENT	EXAMPLE
216	Addition Word Problems	21601	A. A word problem involving the addition of whole numbers	Identifies an addition procedure for solving the problem	"How many children are in a small country school where there are 28 first graders, 14 second graders and 30 third graders only?" (add 28, 14, and 30)
			B. A word problem involving the addition of whole numbers	Identifies an addition number sentence for solving the problem	(28 + 14 + 30 = ____)
			C. A word problem involving the addition of whole numbers	Identifies the answer to the problem	(72)
219	Subtraction Word Problems	21901	A. A word problem involving the subtraction of whole numbers	Identifies a subtraction procedure for solving the problem	"There are 36 children in a classroom. 18 are girls. How many boys are there?" (subtract 18 from 36)
			B. A word problem involving the subtraction of whole numbers	Identifies a subtraction number sentence for solving the problem	(36 — 18 = ____)
			C. A word problem involving the subtraction of whole numbers	Identifies the answer to the problem	(18)
222	Multiplication Word Problems	22201	A. A word problem involving the multiplication of whole numbers	Identifies a multiplication procedure for solving the problem	"An apple orchard has 12 rows of trees with 8 trees in each row. How many trees are in the orchard?" (multiply 8 by 12)
			B. A word problem involving the multiplication of whole numbers	Identifies a multiplication number sentence for solving the problem	(8 × 12 = ____)
			C. A word problem involving the multiplication of whole numbers	Identifies the answer to the problem	(96)
225	Division Word Problems	22501	A. A word problem involving the division of whole numbers	Identifies a division procedure for solving the problem	"A farmer wants to put all 40 of his sheep in 8 pens. If he puts the same number of sheep in each pen, how many will there be in each pen?" (divide 40 by 8)

FRACTIONS

BASIC CHARACTERISTICS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
243 Terms	24301	A. The terms "numerator" and "denominator"	Identifies the corresponding parts of a fraction	"Numerator" (→3/4)
		B. A fraction	Names the parts of the fraction	1/3 (numerator is 1; denominator is 3)
246 Congruency of Shapes	24601	Shapes divided into congruent parts and divided into non-congruent parts	Identifies shapes as being divided into either congruent or non-congruent parts and shapes	(Congruent Parts) (Noncongruent Parts)
249 Physical Representations	24901	Objects or shapes divided into two, three, or four congruent parts	Names the whole as "two-halves," "three-thirds," or "four-fourths" and names the parts "one-half," "one-third," or "one-fourth"	 (Halves) (Thirds) (Fourths)
	24902	An object or shape divided into two, three, or four congruent parts with one or more of the parts shaded or otherwise identified	Identifies the fraction corresponding to the shaded part of the (whole) shape or object	(1/2 (1/4)
	24903	A fraction (1/2, 1/3, or 1/4)	Identifies the part of a whole shape or object corresponding to the fraction	1/3
	24904	A shape or object divided into two, three, or four congruent parts	Identifies the numerator of a fraction as describing a number of parts and the denominator as describing the total parts in the whole	 2/3
	24905	A fraction	Identifies the parts of a shape or object described by the numerator and the denominator	3/4 
	24906	A number line marked by a sequence of fractions (with one missing) with the same denominator	Identifies the missing fraction	 0 1/4 2/4 / 4/4 (3/4)

MEASUREMENTS

LINEAR

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
456 Conversions, Metric Units	45601	A metric unit of linear measurement (km or m) and a subunit of the unit (m, cm, mm)	Identifies the number of subunits making up the unit	1 meter ____ centimeters (100)
459 Measurement, Metric Units	45901	A. A line segment	Measures with a ruler and expresses length to the nearest millimeter	(Depends on line segment to be measured)
		B. Several metric units of linear measurement	Identifies an object or line segment whose length corresponds to a given number of units	(Depends on units given and objects measured)
	45902	A length expressed in metric units and subunits	Expresses the measure in one of the units or subunits using decimal notation	5 meters, 23 centimeters, 5 millimeters (5.235 m or 523.5 cm or 5235 mm)
462 Measuring Perimeter	46201	An English unit of linear measurement and a simple geometric shape	Identifies the length of the perimeter of the shape to the nearest unit	Inches (Answer depends on shape chosen)

MEASUREMENTS

TIME

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
516 Names of Days and Months	51601	The name of a day of the week	Names the following and preceding days of the week	Monday (Tuesday, Sunday)
	51602	The name of a month of the year	Names the following and preceding months	July (August, June)
519 Units and Subunits of Clock Time	51901 A.	A unit of time	Identifies an equivalent number of subunits of the given unit	Day (24 hours)
	B.	A number of subunits of time equal to a unit of time	Identifies an equivalent unit of time	60 minutes (1 hour)
522 Telling Time	52201 A.	A display of clock hands showing an exact hourly time	Identifies the time represented on the clock	3 o'clock displayed on a clock (3:00)
	B.	An exact hour of the day (seven o'clock, etc.)	Identifies the corresponding clock representation	7 o'clock (Move hands of clock to show 7:00)
	52202 A.	A display of clock hands showing a time in minutes (2:47, etc.)	Identifies the time represented on the clock	2:47, displayed on a clock (2:47)
	B.	A time of day in minutes (9:36, etc.)	Identifies the corresponding clock representation	9:36 (moves hands of clock to show 9:36)
	52203	A given hour of the day	Names the hour that is one hour later and one hour earlier	Five o'clock (six o'clock, four o'clock)

MEASUREMENTS

TEMPERATURE

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
525 Reading a Temperature Gauge Farenheit (F°)	52501	A. A temperature gauge graduated in degrees Fahrenheit	Names the scale as Fahrenheit and names temperature to the nearest degree	Temperature gauge showing 52°F (Fahrenheit, 52°)
		B. A given temperature (F)	Identifies a temperature gauge representing the given temperature	104°F (draws mark to show 104°F on picture of temperature gauge)
528 Reading a Temperature Gauge Celsius (C°)	52801	A. A temperature gauge graduated in degrees Celsius	Names the scale as Celsius and names temperature to the nearest degree	Temperature gauge showing 12°C (Celsius, 12°C)
		B. A given temperature (C)	Identifies a temperature gauge representing the given temperature	82°C (draws mark to show 82°C on picture of temperature gauge)
	52802	A. (F or C) temperature gauge with a temperature below, at, or above the freezing point of water	Identifies the temperature as "at," "below," or "above" the freezing point of water	Temperature gauge showing —5°C ("below freezing")
		B. (F or C) temperature gauge with a temperature below, at, or above the boiling point of water	Identifies the temperature as "at," "below," or "above" the boiling point of water	Temperature gauge showing 100°C ("at boiling")

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MEASUREMENTS

MONEY

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
537 Names of U.S. Coins and Their Values	53701	A. Any one of 5 different U.S. coins	Names the coin	Dime (Dime or 10¢ piece)
		B. The name of any U.S. coin from a collection of coins of different value	Identifies the coin corresponding to the word name	"Quarter" (points to quarter)
	53702	A. Any U.S. coin	Identifies the value of the coin in cents	"Half dollar" (50¢)
		B. A value in cents (1¢, 5¢, 10¢, 25¢, 50¢)	Identifies the corresponding coin	5¢ (Nickel)
540 Value of U.S. Bills	54001	A. A U.S. bill ($1, $5, $10, $20)	Identifies the value of the bill in dollars	$5 bill (five dollars)
		B. A value in dollars corresponding to a U.S. bill (one, five, ten or twenty dollars)	Identifies the bill corresponding to the given value	Twenty dollars ($20 bill)
543 Ordering U.S. Coins	54301	Five different U.S. coins	Identifies the value of the coins in ascending or descending order	5 U.S. coins (places coins in descending order of value)
	54302	Several collections of money, each of whose value is $\leq$ $5	Identifies the collection having the greatest and least value	2-$1 bills, 6 quarters, 1 dime, 4 pennies; 3-$1 bills, 1 quarter, 6 nickels, 1 penny (1st collection greatest value, 2nd least)

SETS

SINGLE SETS

SUBTOPICS		GIVEN	THE STUDENT	EXAMPLE
615 Concept of a Set	61501	A collection of similar objects	Identifies the collection as a set	Group of blue poker chips ("This is a set.")
618 Elements		A. The words "element of"	Identifies the symbol standing for "element of" (ϵ)	"Element of" (ϵ)
	61801	B. The symbol denoting "element of" (ϵ)	Identifies a correct use of the symbol denoting "element of"	ϵ (José ϵ the class — José is a member of the class.)
		C. A collection of similar and unlike objects	Identifies those objects belonging to a set using the symbol for "element of"	A collection of numbers— 2, 3, 5, 6, 12, 17, 76 (2 ϵ even numbers)
621 Set Notation for Single Sets	62101	A. A collection of objects	Identifies a set notation description of the collection	The pupils sitting at Table 1 ({John, Mary, Julio, Juanita, Reggi})
		B. Set notation describing a (small) set	Identifies those elements belonging to the set	{1, 6, 23, 0, 14} (The numerals 1, 6, 23, 0, 14)
624 Set Cardinality	62401	A. A finite set of objects	Identifies the cardinality of the set	The set of girls in your class (14)
		B. A cardinal number	Identifies a set having the given cardinal value	6 ({0, 1, 2, 3, 4, 5}) or (any other set having six numbers)
	62402	An infinite collection of entities	Identifies set notation appropriate to the given collection	Set of whole numbers ({1, 2, 3, 4, . . . })
627 Empty Set	62701	A. An empty set	Identifies a correct symbol for the empty set	The number of elephants in this class ({ } or $\emptyset$)
		B. Symbol for an empty (null) set	Identifies a set (empty) corresponding to the symbol for an empty set	$\emptyset$ or { } (The number of fifth graders in this school who are grandmothers)

SETS

SET RELATIONS

SUBTOPICS		GIVEN		THE STUDENT	EXAMPLE
642 One-to-One	64201	A.	The relation name "one-to-one"	Identifies sets having a one-to-one relation	"One-to-one" (5 flowers and 5 girls, one to each)
		B.	Sets having a one-to-one relation	Names the set relation as "one-to-one"	8 dogs, 8 boys, one dog to each boy ("one-to-one")
645 Many-One	64501	A.	The relation name "N-to-one" or "many-one"	Identifies sets having an N-to-one (or many-one) relation	"Many-one" ($25, 5 people — $5 to each person)
		B.	Sets having an N-to-one (or many-one) relation	Names the set relation as "N-to-one" (or "many-one")	51 pieces of candy, 17 people —3 pieces of candy for each person (many-one)
648 One-Many	64801	A.	The relation name "one-many"	Identifies sets having a one-many relation	"One-many" (15 people, 25 books—one person to five books)
		B.	Sets having a one-many relation	Names the set relation as "one-many"	17 people, 51 pieces of candy —one person to 3 pieces of candy (one-many)
651 Many-Many	65101	A.	The relation name "many-many"	Identifies sets having a many-many relation	"Many-many" (5 people 5 stores—each person to five stores)
		B.	Sets having a many-many relation	Names the set relation as "many-many"	35 children 5 classes—each person to 5 classes (many-many)